

Solar cycle variation of CMEs and CIRs

Coronal mass ejections (CMEs) and high-speed solar wind streams (HSS) are two solar phenomena that produce large-scale structures in the interplanetary (IP) medium. CMEs evolve into interplanetary CMEs (ICMEs) and the HSS result in corotating interaction regions (CIRs) when they interact with preceding slow solar wind. CMEs and CIRs originate from closed (active region and filament region) and open (coronal hole) magnetic field regions on the Sun, respectively. These two types of mass emissions from the Sun are responsible for the largest effects on the heliosphere, particularly on Earth's space environment. This paper discussed how these structures and their solar sources vary with the solar cycle and the consequent changes in the geospace impact.